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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,585	10/22/2003	Sheng Ming Deng	BHT-3129-126	6102

7590 01/11/2005
BRUCE H. TROXELL
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FALLS CHURCH, VA 22041

EXAMINER

CAO, HUEDUNG X

ART UNIT	PAPER NUMBER
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2821

DATE MAILED: 01/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/689,585

Applicant(s)

DENG ET AL.

Examiner

Huedung X Cao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "element 500, element 10", in figure 1; and "element 50", in figure 2. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct

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any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (Specification, pages 1-2; and figure 1) in view of MIZUNO et al. (USP 6,351,239 B1).

As per claim 1, the Prior Art teaches the claimed, "GPS/DAB and GSM' hybrid antenna array" comprising:

an entrainer for entraining a printed circuit board (PCB) 01- other electric circuit boards (Prior Art, figure 1, element 10);

a GPS/DAB ceramic patch antenna entrained on surface of said entrainer (Prior Art, figure 1, GPS/DAB ceramic patch 200);

a low noise amplifier (LNA) entrained on the other surface of said entrainer opposite to said GPS/DAB ceramic patch antenna (Prior Art, figure 1, LNA 300); and

an antenna for global system mobile communication (GSM) entrained on said entrainer (Prior Art, figure 1, GSM antenna 400);

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wherein said GSM is formed into a planar thin strip type which Prior Art does not explicitly disclose. However, Prior Art's strip antenna can be replaced by Mizuno's strip antenna (Mizuno, the antenna 18, column 7, lines 15-20). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of teaching of Mizuno to configure Prior Art as claimed because by using a strip antenna would help to achieve a small size and high performance of the electronic performance (Mizuno, column 10, lines 2-7).

Claim 2 adds into claim 1, wherein said GSM is formed of a long planar thin strip conductor configured in a continuous wave form directly disposed on said entrainer which Prior Art does not explicitly disclose. However, Prior Art's strip antenna can be replaced by Mizuno's long planar strip antenna (Mizuno, planar strip antenna pattern 60, column 13, lines 35-37). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of teaching of Mizuno to configure Prior Art as claimed because by using a long planar strip antenna would help to achieve a small size and high performance of the electronic performance (Mizuno, column 10, lines 2-7).

Claim 3 adds into claim 1, wherein said GSM is formed of a long planar thin strip conductor configured in a continuous wave form is formed on a thin plate by printing or other processes and after that said thin plate is attached to the surface of said entrainer directly disposed on said entrainer which Prior Art does not explicitly disclose. However, Prior Art's strip antenna can be replaced by Mizuno's strip antenna paced on top of the dielectric layers (Mizuno, antenna 18 printed on the first dielectric layer S1

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attaches to other dielectric layers; column 7, lines 21-26). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of teaching of Mizuno to configure Prior Art as claimed because by using a long planar strip antenna paced on top of the dielectric layers would help to achieve a small size and high performance of the electronic performance (Mizuno, column 10, lines 2-7).

Claim 4 adds into claim 1, wherein an electrically conductive film is intercalated between said entrainer and said GSP/DAB ceramic patch antenna (Prior Art, figure 1, conductor film 201).

Claim 5 adds into claim 2, wherein an electrically conductive film is intercalated between said entrainer and said GSP/DAB ceramic patch antenna (Prior Art, figure 1, conductor film 201).

Claim 6 adds into claim 3, wherein an electrically conductive film is intercalated between said entrainer and said GSP/DAB ceramic patch antenna (Prior Art, figure 1, conductive film 201).

As per claim 7, wherein said GSM planar antenna entrained on said entrainer in a printed dipole antenna which Prior Art does not disclose. However, Mizuno discloses a printed monopole antenna through coupling-adjusting electrodes (Mizuno, the monopole antenna, column 17, lines 51-56). It would have been obvious to a person of ordinary skill in the art at the time the invention was made , in view of teaching of Mizuno to configure Prior Art as claimed because by using printed monopole antenna through coupling-adjusting electrodes would help to achieve a small size and high performance of the electronic performance (Mizuno, column 10, lines 2-7).

Claim 8 adds into claim 4, wherein said GSM planar antenna entrained on said entrainer in a printed monopole antenna which Prior Art does not disclose. However, Mizuno discloses a printed dipole antenna disposed on a planar (Mizuno, the dipole antenna 70, figure 15, column 15, lines 41-44). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of teaching of Mizuno to configure Prior Art as claimed because by using a dipole strip antenna paced on top of the dielectric layers would help to achieve a small size and high performance of the electronic performance (Mizuno, column 10, lines 2-7).

Claim 9 adds into claim 7, wherein a GSM planar antenna is split into two sections formed on two opposite surfaces of said entrainer respectively which Prior Art does not disclose. However, Mizuno discloses a GSM planar antenna is split into two sections formed on two opposite surfaces of said entrainer respectively (Mizuno, figure 10, element 60a and element 60b). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in view of teaching of Mizuno to configure Prior Art as claimed because by using a dipole strip antenna paced on top of the dielectric layers would help to achieve a small size and high performance of the electronic performance (Mizuno, column 10, lines 2-7).

Claim 10 adds into claim 4, wherein said GSM planar antenna is a slot dipole antenna formed of two sections of L shaped slot facing against each other on a conductor film which Prior Art does not disclose. However, Mizuno discloses a printed dipole antenna disposed on a planar (Mizuno, figure 1, element 18). It would have been obvious to a person of ordinary skill in the art at the time the invention was made, in

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view of teaching of Mizuno to configure Prior Art as claimed because by using a dipole strip antenna paced on top of the dielectric layers would help to achieve a small size and high performance of the electronic performance (Mizuno, column 10, lines 2-7).

Allowable Subject Matter

5. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art made of record fails to anticipate or make obvious the claimed invention. Specifically, the prior art fails to teach, in combination with the remaining elements as recited in claim 11: a GSM planar antenna is formed on a grounded conductive film which being intercalated between said LNA and said entrainer, a breach is formed on an open slot located at the edge of said entrainer.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

YING (USP 6,329,962 B2) discloses an antennas for mobile communication devices comprising a multiple band, multiple branch antenna.

NIEMIMEN (USP 6392609 B2) disclose an antenna device especially for GPS applications, which is cheap to manufacture and has a narrow bandwidth.

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Inquires

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Huedung Cao whose telephone number is (571) 272-1939.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong, can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

8. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Huedung Cao
Patent Examiner